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ESTIMATED 1961
CHICAGO
SCHEDULED AIR CARRIER
PASSENGER VOLUMES
BY
MILEAGE CATEGORIES

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The City of Chicago
Richard J. Daley, Mayor

Department of Aviation
William E. Downes, Jr.
Commissioner

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ESTIMATED 1961
CHICAGO SCHEDULED AIR CARRIER
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MILEAGE CATEGORIES

This study develops the estimated 1961 scheduled air carrier passenger volume by mileage categories from Chicago to airline stations in the continental United States. Its principal source material is the "Domestic Origin-Destination Survey of Airline Passenger Traffic" which is a ten-percent sample for the third quarter of 1961 (July 1 through September 30, 1961). This survey was compiled by the Civil Aeronautics Board and published by the Air Transport Association of America. Other source material consists of FAA publications and CAB-FAA statistical data.

During the third quarter of 1961, as shown in the O & D Survey, Chicago exchanged passenger traffic with virtually every community served by scheduled air carriers. Based on a 10% sample, there were 133,909 passengers beginning or ending a trip at Chicago. The bulk of these passengers came from or went to a relatively few communities. Table 1 shows basic data taken from the O & D Survey for the third quarter of 1961, for the fifty leading communities exchanging scheduled air passengers with Chicago. The total of the ten-percent sample of passenger traffic between Chicago and these fifty communities was 112,060 passengers, or approximately 83.7% of the total 133,909 ten-percent sample for Chicago.

An analysis was made of the thirty leading communities (base cities) with which Chicago exchanged passengers. These communities are the first 30 shown in Table 1. The passenger volume arriving from or departing to these 30 communities was 93,399 passengers or 74.2% of the 133,909 passengers in the ten-percent Chicago sample.

Table 2 shows data for each of these top 30 communities. The "Chicago Passengers" represent arrivals and departures by persons beginning or ending a trip at Chicago to or from each base city. The number of passengers was obtained direct from the O & D Survey figures for Chicago. The "Interline Transfers" for each of the 30 communities (base cities) represent the number of passengers to and from each base city transferring to another airline at Chicago, enroute to or from a point beyond Chicago. The number of transferees was obtained by analysis of the ten-percent sample between each of the 30 base cities and all of the communities (destination cities) with which it exchanged passengers.

Those passengers whose routing showed an airline transfer at Chicago were tabulated as "Interchange Passengers". The communities with which each of the 30 base cities exchanged passengers via an interline transfer at Chicago were grouped according to the distance of the destination city from Chicago, in 250-mile increments. Table 2 shows the total of arriving and departing "Interline Transfers" for each of the 30 base cities and a distribution of this total between the appropriate mileage categories.

A further refinement was made by grouping the 30 base cities into mileage categories of 250-mile increments. These are shown on Table 3. The data for the 30 base cities, developed in Table 2 were grouped according to the mileage of each of the 30 base cities from Chicago. This permits an analysis of mileages to the destinations of departing Chicago passengers as well as mileages from both Chicago-to-base city, and Chicago-to-destination for the interline transfer passengers who change airlines at Chicago.

The ten-percent sample in the O & D Survey shows 133,909 arriving and departing passengers for the third quarter of 1961. This would approximate 67,000 departing passengers.

The analysis of the 30 leading communities exchanging passengers with Chicago shows 99,399 arriving and departing passengers. This is 74.2% of the total.

The same analysis shows 37,077 interline transfers at Chicago coming from or going to the 30 communities (base cities). By applying the 74.2% factor to this interline transfer volume, the total for Chicago is approximately 50,000 interline transfers for the 10 per cent sample, during the third quarter of 1961.

The approximate number of passenger originations for Chicago for the third quarter, based on the O & D Survey, is developed as shown below:

Departing Passengers	67,000
Interline Transfers	<u>50,000</u>
Sub-total Ten-Percent Sample	117,000
TOTAL (Sub-total x 10)	1,170,000

This figure compares favorably with FAA-CAB data that show third quarter, 1961 originations for Chicago to be 1,187,349 passengers.

The approximation of passenger originations for the third quarter of 1961 can be multiplied by four to obtain a valid estimate for the full year, 1961. Thus, the 1,170,000 passengers, developed above for the third quarter, reflects an annual estimate of $1,170,000 \times 4$, or 4,680,000 originating passengers. The published FAA-CAB figures for FY 1961 show 4,755,950 originating passengers for Chicago in FY 1961. Calendar 1961 figures obtained from the FAA show 4,668,390 passenger originations for Chicago in calendar year 1961. Thus, the estimate of 4,680,000 passenger originations for 1961 verifies the extrapolation of sample data in the third quarter O & D Survey.

Having determined the validity of extrapolating the quarterly sample figures in the O & D Survey into an annual estimate, the same method was used to expand the numbers of passengers in various groups and categories into annual estimates. For example, Table 3 shows 99,399 Chicago passengers in the 30-city analysis of the ten-percent sample, 3rd quarter, 1961, O & D Survey. Expansion to the 1961 estimate is shown below:

	MILEAGE GROUPS					TOTAL
	1	2	3	4	5	
Chicago Passengers 30 Base Cities (74.2% of Total)	10,828	28,795	31,805	9,763	18,208	99,399
Chicago Passengers (adjusted to 100%) Arriving and Departing	14,600	38,800	43,000	13,200	24,400	134,000
Chicago Passengers Departing - 10% 3rd Quarter, 1961	7,300	19,400	21,500	6,600	12,200	67,000
Estimated Passengers Departing - 3rd Quarter	73,000	194,000	215,000	66,000	122,000	670,000
Estimated Chicago Passengers - 1961	292,000	776,000	860,000	264,000	488,000	2,680,000

Table 4 lists the results obtained above, under "Chicago Passengers." The total of "Interline Transfers" in Table 3 was extrapolated to an estimated annual rate. The figure in Table 3 includes departing Chicago passengers both to the base city and to the destination city. The passengers departing to the base city will fall in the same mileage groups as originating Chicago passengers, since destination is to the base city. The "Interline Transfers to Base City", as shown in Table 4, are developed as follows:

	MILEAGE GROUPS					TOTAL
	0-250	250-500	500-750	750-1000	Over 1000	
Interline Transfers (74.2% of Total)	4,923	12,817	6,400	5,293	7,644	37,077
Interline Transfers (adjusted to 100%) 10-percent sample	6,500	17,300	8,800	7,100	10,300	50,000
Interline Transfers 3rd Quarter, 1961	65,000	173,000	88,000	71,000	103,000	500,000
Estimated Chicago Interline Transfers 1961	260,000	692,000	352,000	284,000	412,000	2,000,000
Estimated Passengers Departing to Base Cities	130,000	346,000	176,000	142,000	206,000	1,000,000
Estimated Passengers Departing to Destination Cities	130,000	346,000	176,000	142,000	206,000	1,000,000

The estimated number of passengers departing to base cities, developed above, is entered under "Interline Transfers to Base Cities" in Table 4. The number of passengers departing to destination cities, developed above, are equal to the number departing to base cities.

Figures shown under the heading "Interline Transfers to Destination Cities By Mileage Groups" in Table 4 are developed from the data shown under a similar heading in Table 3, using the same method as shown above. The total of the "Interline Transfers to Destination Cities" for all of the mileage groups is equal to the "Interline Transfers to Base Cities".

Having developed the estimates of passenger traffic for various mileage categories, the results can be applied to the airport situation in Chicago. Reference is made to the report "The Revitalization of Scheduled Air Carrier Activity at Chicago Midway Airport," dated May, 1962 which this study complements.

The volume of Chicago's Passenger traffic, as expressed by on-line originations, is shown in Table 3, which is, in effect, a market analysis of passenger volumes within various distance parameters.

In Table 5, the data developed for Table 4 are repeated, with passenger totals shown for various mileage groups. The first group shows the estimated number of on-line passenger originations with destinations less than 500 miles from Chicago. The total is 1,798,000 or 38% of Chicago's total on-line originations.

The provision of more adequate airline service at Midway Airport, if only within the limits of this 500-mile parameter, and if 50% of the total passengers in the 500-mile range are enplaned at Midway, would result in a volume of approximately 900,000 annual on-line originations. This would be substantially in excess of the volume of domestic passengers handled in 1961 at Houston, Kansas City, Minneapolis or New Orleans.

Within a parameter of 750 miles there was an estimated annual volume of 3,004,000 on-line originating passengers, or 64% of Chicago's total estimate. If half of these passengers were enplaned at Midway Airport, there would be a volume of 1,500,000 on-line originating passengers. This approximates the volume of domestic passengers at Miami, Dallas, Boston, Newark or Detroit (both airports).

The distribution of passengers by mileage groups shows the diversity of travel patterns and points out the need for fully balanced schedules at both Midway Airport and O'Hare Field. Such balance is necessary for the Chicago passenger who is interested in accessibility to the airport, especially in the short-haul market. It is in this short-haul market that convenience of schedules and airport accessibility can be the factors that determine whether or not a trip is made by air.

Balanced schedules are also needed to accommodate the high volume of transferring passengers who change flights at Chicago. In any category, however, there is a sufficient volume of passengers to warrant fully balanced schedules at both Midway and O'Hare, sufficient to accommodate the convenience of the Chicago passenger and the easy transfer of the interchange passenger.

With any split operation there will be some passengers whose interchange will require a transfer from one airport to another. Fully balanced schedules will minimize this airport transfer within the parameters of service offered. Short-haul Midway arrivals transferring to a long-haul departure at O'Hare would be the primary reason for airport transfers.

The estimated volume of airport transfers required within the 500 mile parameter is one-half the number of passengers to destination cities beyond 500 miles, but originating from base cities less than 500 miles, or 111,000 passengers plus one-half the number of passengers to base cities beyond 500 miles, or 262,000 passengers. This makes the total estimate 373,000 annual airport transfers as the maximum that would be required, although others would undoubtedly be made solely for convenience or due to weather, delays, cancellations or diversions.

The volume of required airport transfers within the 750-mile parameter is estimated at 288,000 maximum required airport transfers.

The 500-mile parameter is one that lends itself to service by propeller-driven aircraft. The bulk of passengers from Chicago, to and from cities within 500 miles is currently handled by propeller aircraft. Hence, Midway Airport is capable of accommodating all propeller aircraft serving cities within 500 miles. Midway should, however, provide service within the 750-mile parameter since this adds the important seaboard cities of New York, Philadelphia, Washington and Baltimore, plus Atlanta. There is a high volume of jet service to these more distant cities, but Midway will be able to accommodate smaller jets, now on order, for hot-weather stage distances of 750 miles. Hence, it is feasible to anticipate Midway's use within the 750 mile parameter.

The foregoing figures have all been based on figures which concern transfers only from one airline to another. There is a high volume of on-line transfers at Chicago. This is shown on Table 6. "On-Line Originations" includes only interline transfers but the "Total Enplanement" figure includes on-line transfers. The volume of such on-line transfers was approximately 500,000 passengers in 1961. The percentage of on-line transfers is shown in Table 6 and it can be seen that only three carriers have substantial volumes of on-line transfers.

Table 7 is similar to Table 5, and includes the on-line transfers shown in mileage groups in the same proportions as were developed for interline transfers. The totals within each parameter are substantially increased and further reinforce the fact that there is a sufficient volume of short-haul traffic generated in Chicago to justify well-balanced airline schedules at both Chicago Midway Airport and Chicago-O'Hare International Airport.

TABLE 1
FIFTY LEADING COMMUNITIES EXCHANGING SCHEDULED
AIR CARRIER PASSENGERS WITH CHICAGO

Source: O & D Survey, 3rd Quarter, 1961 - 10% Sample

Rank	City	Miles From Chicago	Passengers To & From Chicago	Rank	City	Miles From Chicago	Passengers To & From Chicago
1	New York	711	21,165	26	Tampa	1,004	1,199
2	Los Angeles	1,742	7,262	27	Hartford	768	1,139
3	Detroit	237	6,130	28	Des Moines	308	1,082
4	Minneapolis	354	5,619	29	Houston	941	1,012
5	San Francisco	1,854	4,671	30	Grand Rapids	125	1,012
6	St. Louis	261	4,224	31	Phoenix	1,451	941
7	Cleveland	307	4,121	32	Memphis	482	898
8	Philadelphia	664	4,114	33	New Orleans	835	845
9	Miami	1,190	3,684	34	Toledo	211	793
10	Boston	849	3,667	35	Moline	151	774
11	Washington	595	3,033	36	San Diego	1,731	753
12	Pittsburgh	409	2,957	37	Las Vegas	1,521	710
13	Kansas City	412	2,934	38	Rochester, N.Y.	518	680
14	Indianapolis	164	2,371	39	Milwaukee	81	634
15	Cincinnati	252	2,226	40	Portland, Ore.	1,754	549
16	Denver	917	2,176	41	Evansville	269	542
17	Baltimore	605	2,064	42	Syracuse	590	535
18	Dallas	803	1,769	43	Akron-Canton	321	533
19	Louisville	269	1,530	44	Nashville	397	525
20	Atlanta	588	1,429	45	Peoria	130	521
21	Seattle	1,733	1,392	46	Saginaw	216	517
22	Buffalo	452	1,380	47	Rochester, Minn.	285	508
23	Omaha	430	1,370	48	Tulsa	597	486
24	Columbus	275	1,352	49	Jacksonville	864	463
25	Dayton	231	1,315	50	Cedar Rapids	206	454

Total Passengers To & From Chicago in O & D Sample	133,909	
Passengers To & From Chicago, 50 Leading Communities	112,060	- 83.7%
Passengers To & From Chicago, 30 Leading Communities	99,399	- 74.2%

TABLE 2.- SUMMARY OF 30-CITY ANALYSIS OF 10% SAMPLE - 3RD QUARTER, 1961 O & D SURVEY

Rank	City	Miles From Chicago	Chicago Passengers	Interline Transfer	Interline Transfers By Mileage Groups				
					0 - 250	250 - 500	500 - 750	750 - 1000	Over 1000
1	New York	711	21,165	2,924	1,406	737	77	197	507
2	Los Angeles	1,742	7,262	2,390	1,268	582	448	64	28
3	Detroit	237	6,130	1,793	398	538	97	330	430
4	Minneapolis	354	5,619	2,632	698	869	513	386	166
5	San Francisco	1,854	4,671	2,245	875	690	483	109	88
6	St. Louis	261	4,224	1,300	659	203	121	91	226
7	Cleveland	307	4,121	1,655	267	318	78	333	659
8	Philadelphia	664	4,114	1,241	442	307	46	146	300
9	Miami	1,190	3,684	994	344	220	27	118	285
10	Boston	849	3,667	1,414	515	485	19	116	279
11	Washington	595	3,033	903	396	195	38	50	224
12	Pittsburgh	409	2,957	1,317	279	279	37	358	364
13	Kansas City	412	2,934	1,332	706	303	268	43	12
14	Indianapolis	164	2,371	1,455	256	383	71	214	531
15	Cincinnati	252	2,226	1,020	341	231	27	102	319
16	Denver	917	2,176	1,900	562	521	518	147	152
17	Baltimore	605	2,064	588	199	95	22	25	247
18	Dallas	803	1,769	1,046	533	378	87	41	7
19	Louisville	269	1,530	848	244	188	19	78	319
20	Atlanta	588	1,429	744	316	119	23	93	193
21	Seattle	1,733	1,392	1,669	415	604	426	122	102
22	Buffalo	452	1,380	846	180	253	44	139	230
23	Omaha	430	1,370	652	228	130	190	54	50
24	Columbus	275	1,352	696	186	218	25	77	190
25	Dayton	231	1,315	981	264	199	31	150	337
26	Tampa	1,004	1,199	346	155	68	7	65	51
27	Hartford	768	1,139	360	165	91	5	41	58
28	Des Moines	308	1,082	519	179	120	140	35	45
29	Houston	941	1,012	573	282	220	42	20	9
30	Grand Rapids	125	1,012	694	66	215	98	90	225
TOTALS			99,399	37,077	12,824	9,759	4,027	3,834	6,633

TABLE 3

ANALYSIS OF 30 LEADING CITIES INTERCHANGING PASSENGERS WITH CHICAGO
 SHOWING MILEAGE CATEGORIES OF ORIGIN AND DESTINATION -
 - 10 PERCENT SAMPLE O & D SURVEY - THIRD QUARTER, 1961

Mileage Groups	Chicago Passengers	Interline Transfers	Interline Transfers -			By Mileage Groups	
			0-250	250-500	500-750	750-1000	Over 1000
GROUP 1 - CITIES 0-250 MILES FROM CHICAGO Detroit - Indianapolis Dayton - Grand Rapids	10,828	4,923	984	1,335	297	784	1,523
GROUP 2 - CITIES 250-500 MILES FROM CHICAGO Minneapolis - St. Louis Cleveland - Pittsburgh Kansas City - Cincinnati Louisville - Buffalo Omaha - Columbus Des Moines	28,795	12,817	3,967	3,112	1,463	1,696	2,580
GROUP 3 - CITIES 500-750 MILES FROM CHICAGO New York - Philadelphia Washington - Baltimore Atlanta	31,805	6,400	2,759	1,453	206	511	1,471
GROUP 4 - CITIES 750-1000 MILES FROM CHICAGO Boston - Denver - Dallas Hartford - Houston	9,763	5,293	2,057	1,695	671	365	505
GROUP 5 - CITIES OVER 1000 MILES FROM CHICAGO Los Angeles - San Francisco Miami - Seattle - Tampa	18,208	7,644	3,057	2,164	1,391	478	554
TOTAL 30 CITIES	99,399	37,077	12,824	9,759	4,027	3,834	6,633

TABLE 4

ESTIMATED 1961 CHICAGO AIR CARRIER PASSENGER ORIGINATIONS
SHOWING MILEAGE CATEGORIES OF ORIGIN AND DESTINATION

Mileage Groups For Base Cities	Chicago Passengers	Interline Transfers To Base Cities	Interline Transfers to Destination CITIES - BY MILEAGE GROUPS				
			0-250	250-500	500-750	750-1000	Over 1000
GROUP 1 - CITIES 0-250 MILES FROM CHICAGO	292,000	130,000	26,000	36,000	8,000	20,000	40,000
GROUP 2 - CITIES 250-500 MILES FROM CHICAGO	776,000	346,000	108,000	84,000	40,000	46,000	68,000
GROUP 3 - CITIES 500-750 MILES FROM CHICAGO	860,000	176,000	76,000	40,000	6,000	14,000	40,000
GROUP 4 - CITIES 750-1000 MILES FROM CHICAGO	264,000	142,000	55,000	51,000	17,000	9,000	10,000
GROUP 5 - CITIES OVER 1000 MILES FROM CHICAGO	488,000	206,000	82,000	58,000	38,000	13,000	15,000
TOTAL ESTIMATE	2,680,000	1,000,000	347,000	269,000	109,000	102,000	173,000

TABLE 5

TOTAL PASSENGER ORIGINATIONS
FOR VARIOUS MILEAGE CATEGORIES

MILEAGE GROUPS FOR BASE CITIES	CHICAGO PASSENGERS	INTERLINE TRANSFERS TO BASE CITIES	INTERLINE TRANSFERS TO DESTINATION CITIES -- BY MILEAGE GROUPS							
			0-250	250-500	500-750	750-1000	Over 1000			
					X	X	X			X
					X	X	X			X
					X	X	X			X
0 - 250	292,000	130,000	26,000	36,000	X 8,000	X 20,000	X 40,000			X
					X	X	X			X
250 - 500	776,000	346,000	108,000	84,000	X 40,000	X 46,000	X 68,000			X
				1,798,000	X	X	X			X
XX						X	X			X
						X	X			X
500 - 750	860,000	176,000	76,000	40,000	6,000	X 14,000	X 40,000			X
					3,004,000	X	X			X
XX						X	X			X
						X	X			X
750 - 1000	264,000	142,000	55,000	51,000	17,000	9,000	X 10,000			X
						3,622,000	X			X
XX						X	X			X
							X			X
OVER 1000	488,000	206,000	82,000	58,000	38,000	13,000	15,000			X
						4,680,000	X			X
XX						X	X			X

TABLE 6

ON-LINE ORIGINATIONS AND
TOTAL ENPLANEMENTS - 1961
CHICAGO, ILLINOIS

Source: CAB-FAA DATA

Airline	Aircraft Departures	On-Line Originations	Total Enplanements	% On-Line Transfers
American	24,547	918,958	1,032,123	13%
Braniff	3,450	129,289	129,290	--
Continental	2,377	124,368	125,252	--
Delta	10,336	447,739	450,859	--
Eastern	10,757	319,979	324,373	2%
Lake Central	3,071	39,864	39,864	--
North Central	14,585	267,206	272,392	2%
Northwest	7,673	224,700	235,561	5%
Ozark	8,521	125,765	126,026	--
T.W.A.	16,882	494,073	573,598	16%
United	<u>50,723</u>	<u>1,576,449</u>	<u>1,890,395</u>	<u>20%</u>
	152,922	4,668,390	5,199,733	11%

TOTAL PASSENGER ENPLANEMENTS FOR VARIOUS MILEAGE CATEGORIES

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